

**Sine = bow in SANSKRIT**

- vertical leg
- y-coordinate

tangent = length of the tangent from 0 to the ray of each radian

$\tan \frac{\pi}{3}$

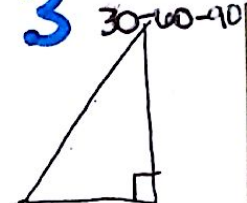
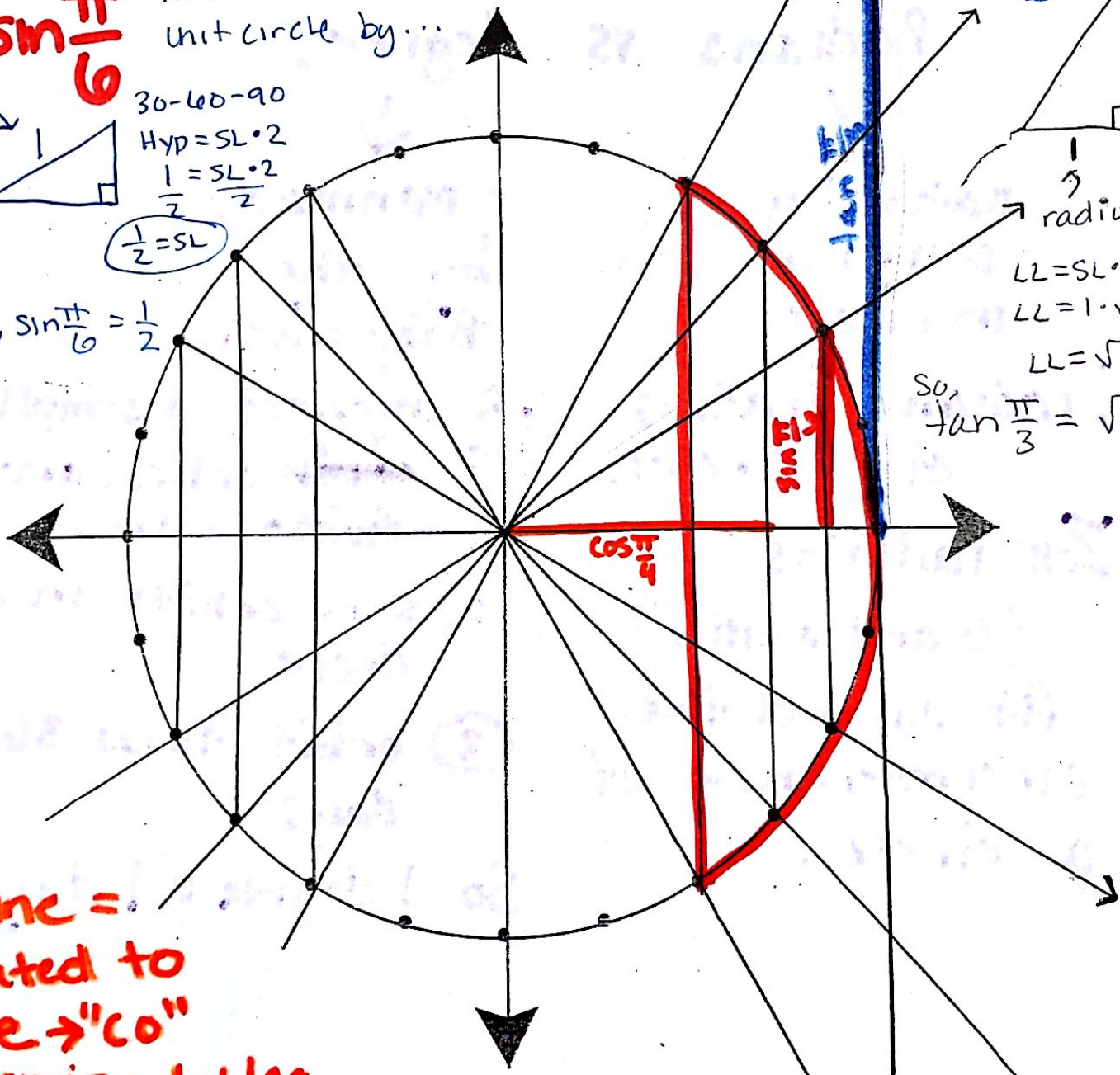
$\sin \frac{\pi}{6}$

is found on the unit circle by...



30-60-90  
Hyp = SL \* 2  
 $1 = \frac{SL \cdot 2}{2}$   
 $\frac{1}{2} = SL$

So,  $\sin \frac{\pi}{6} = \frac{1}{2}$



radius  
 $LL = SL \cdot \sqrt{3}$   
 $LL = 1 \cdot \sqrt{3}$   
 $LL = \sqrt{3}$   
So,  $\tan \frac{\pi}{3} = \sqrt{3}$

**Cosine = related to Sine → "co"**

- horizontal leg
- x-coordinate

$\cos \frac{\pi}{4}$



45-45-90  
Hyp = legs \*  $\sqrt{2}$   
 $\frac{\sqrt{2}}{\sqrt{2}} = \frac{1}{\sqrt{2}}$   
 $\frac{\sqrt{2}}{\sqrt{2}} = \frac{1}{\sqrt{2}}$   
 $\frac{\sqrt{2}}{\sqrt{2}} = \text{leg}$

So,  $\cos \frac{\pi}{4} = \frac{\sqrt{2}}{2}$

## Radians vs degrees

↓  
naturally  
occurring  
in circles

1 radian = 1 radius  
of all circles.

$2\pi$  radians  
(6 and a little)  
fit around the  
circumference of  
a circle.



- manmade  
by the  
Babylonians

- 3 incorrect assumptions

① ~~sun~~ <sup>sun</sup> orbits around  
~~circle~~ earth

② sun orbits in a  
circle

③ orbit takes 360  
days

So 1 degree = 1 day